

**Amendments to the Claims:**

After consideration of the Article 19 claim Amendment, this subsequent listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) A method of converting venous blood values to arterial blood values, said method comprising the steps of:

- a) providing values of arterial oxygenation,
- b) measuring and estimating values of acid/base status and oxygenation status in a blood sample, the sample being obtained from venous blood,
- c) converting the venous blood values by applying a mathematical model for deriving blood acid/base status and oxygenation status into estimated arterial blood values.

2. (Currently Amended) A method ~~of converting venous blood values to arterial blood values according claim 1~~, said method measuring and analysing comprising the further steps of:

- ~~- b) measuring and estimating values of acid/base status and oxygenation status in a blood sample, the sample being obtained from venous blood,~~
- ~~- a) providing values of arterial oxygenation,~~
- ~~- c) converting the venous blood values by applying a mathematical model for deriving blood acid/base status and oxygenation status into estimated arterial blood values~~
- d) providing an anaerobic venous blood sample,
- e) analysing said anaerobic venous blood sample for evaluating the acid/base status of the venous blood sample, and
- f) analysing said anaerobic venous blood sample for evaluating the oxygenation status of the venous blood sample.

3. (Currently Amended) A method according to ~~any of claims 1-2~~ claim 1, said ~~measuring and analyzing method~~ comprising the further steps step of:

- ~~d) providing an anaerobic venous blood sample,~~
- ~~- e) analyzing said anaerobic venous blood sample for evaluating the acid/base status of the venous blood sample and~~

~~f) analyzing said anaerobic venous blood sample for evaluating the oxygenation status of the venous blood sample~~

~~- g) providing the arterial oxygenation such as oxygen saturation, pressure or concentration, said further step being performed at any time in relation to any of the steps a) - c).~~

4. (Currently Amended) A method according to ~~any of claims 1-2~~ claim 3, said measuring and analyzing method comprising the even further steps step of :

~~d) providing an anaerobic venous blood sample,~~

~~-f) analysing said anaerobic venous blood sample for evaluating the oxygenation status of the venous blood sample and~~

~~-e) analysing said anaerobic venous blood sample for evaluating the acid/base status of the venous blood sample~~

~~- h) simulating the blood acid/base status and oxygenation status of an arterial blood sample by use of mathematical modelling.~~

5. (Currently Amended) A method according to ~~any of claims 1-4~~ claim 4, said method comprising still even the further step steps of

~~-g) providing the arterial oxygenation such as oxygen saturation, pressure or concentration, said further step being performed at any time in relation to any of the steps of claims 1-3~~

~~- i) mathematical modelling comprising simulated addition of oxygen, O<sub>2</sub>, to and removal of carbon dioxide, CO<sub>2</sub>, from the venous blood sample values in a ratio determined by the respiratory quotient,~~

~~- j) said mathematical modelling being performed until the simulated oxygen level is equal to the arterial oxygenation level measured or estimated, and~~

~~- k1) calculating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.~~

6. (Currently Amended) A method according to claim 5, ~~claim 4~~ said method comprising the even still even further step steps of

~~-h) simulating the blood acid/base status and oxygenation status of an arterial blood sample by use of mathematical modelling~~

- i) mathematical modelling comprising simulated addition of oxygen, O<sub>2</sub>, to and removal of carbon dioxide, CO<sub>2</sub>, from the venous blood sample values in a ratio determined by the respiratory quotient,
- j) said mathematical modelling being performed until the simulated oxygen level is equal to the arterial oxygenation level measured or estimated, and
- k2) estimating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.

7. (Currently Amended) A method according to ~~claim 6~~ claim 1, said method comprising still even further steps of a further step of

- ~~- i) mathematical modelling comprising simulated addition of oxygen, O<sub>2</sub>, to and removal of carbon dioxide, CO<sub>2</sub>, from the venous blood sample values in a ratio determined by the respiratory quotient,~~
- ~~- j) said mathematical modelling being performed until the simulated oxygen level is equal to the arterial oxygenation level measured or estimated, and~~
- ~~- k1) calculating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling~~
- l) providing the arterial carbon dioxide level such as carbon dioxide pressure, total concentration or bicarbonate concentration), said further step being performed at any time in relation to any of the steps a) - c).

8. (Currently Amended) A method according to ~~claim 6~~ claim 7, said method comprising still even further steps of an even further step of

- ~~- i) mathematical modelling comprising simulated addition of oxygen, O<sub>2</sub>, to and removal of carbon dioxide, CO<sub>2</sub>, from the venous blood sample values in a ratio determined by the respiratory quotient,~~
- ~~- j) said mathematical modelling being performed until the simulated oxygen level is equal to the arterial oxygenation level measured or estimated, and~~
- ~~- k2) estimating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.~~
- m) simulating the blood acid/base status and oxygenation status of arterial blood sample by use of modelling.

9. (Currently Amended) A method according to ~~any of claims 1-8~~ claim 8, said method comprising ~~a further step of~~ the still even further steps of

- ~~-l) providing the arterial carbon dioxide level such as carbon dioxide pressure, total concentration or bicarbonate concentration), said further step being performed at any time in relation to any of the steps of claims 1-4~~
- n) mathematical modelling comprising simulated addition of O<sub>2</sub> to and removing CO<sub>2</sub> from the venous blood sample values in a ratio determined by the respiratory quotient,
- o) said modelling being performed until the simulated carbon dioxide level is equal to the arterial carbon dioxide level measured or estimated, and
- p1) calculating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.

10. (Currently Amended) A method according to ~~claim 9~~ claim 8, said method comprising ~~an even further step of~~ the still even further steps of

- ~~-m) simulating the blood acid/base status and oxygenation status of arterial blood sample by use of modelling~~
- n) mathematical modelling comprising simulated addition of O<sub>2</sub> to and removing CO<sub>2</sub> from the venous blood sample values in a ratio determined by the respiratory quotient,
- o) said modelling being performed until the simulated carbon dioxide level is equal to the arterial carbon dioxide level measured or estimated, and
- p2) estimating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.

11. (Currently Amended) A method according to claim 10 ~~claim 5~~, ~~said method comprising the still even further steps of~~

- ~~-n) mathematical modelling comprising simulated addition of O<sub>2</sub> to and removing CO<sub>2</sub> from the venous blood sample values in a ratio determined by the respiratory quotient,~~
- ~~-o) said modelling being performed until the simulated carbon dioxide level is equal to the arterial carbon dioxide level measured or estimated, and~~

~~—p1) calculating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling~~

where the measuring or estimating of the arterial oxygen saturation is done by pulse oximetry.

12. (Currently Amended) A method according to claim 10, said method comprising the still even further steps of

~~—n) mathematical modelling comprising simulated addition of O<sub>2</sub> to and removing CO<sub>2</sub> from the venous blood sample values in a ratio determined by the respiratory quotient,~~

~~—o) said modelling being performed until the simulated carbon dioxide level is equal to the arterial carbon dioxide level measured or estimated, and~~

~~—p2) estimating the acid/base status and the oxygenation of the arterial blood by applying the result of said modelling.~~

A system for analysing a venous blood sample, the system comprising:

- a blood gas analyzer for

- providing values of arterial oxygenation, and

- measuring and estimating values of acid/base status and oxygenation status in the venous blood sample, and

- means for applying a mathematical model to the values of the arterial oxygenation and the values of acid/base status and oxygenation status in the venous blood sample

characterised in that the venous blood acid/base status and oxygenation status are converted into arterial blood values.

13. (Currently Amended) A method- system according to any of claims 3-12 claim 12, ~~where the measuring or estimating of the arterial oxygen saturation is done by pulse oximetry wherein~~ the arterial blood acid/base status and oxygenation status is calculated or estimated.

14. (Currently Amended) A system for analyzing a venous blood sample, the system comprising:

~~—a blood gas analyzer for~~

~~—————providing values of arterial oxygenation, and~~

~~measuring and estimating values of acid/base status and oxygenation status in the venous blood sample, and~~

~~means for applying a mathematical model to the values of the arterial oxygenation and the values of acid/base status and oxygenation status in the venous blood sample~~

~~characterised in that the venous blood acid/base status and oxygenation status are converted into arterial blood values~~

A system according to claim 12, said system comprising means for measuring arterial oxygenation saturation, where the means preferably is a pulse oximeter.

15. (Currently Amended) A system according to claim 14, ~~wherein the arterial blood acid/base status and oxygenation status is calculated or estimated~~ claim 12, said system comprising a device for anaerobic sampling, preferably by drawing of a venous blood sample.

16. (Currently Amended) A system according to claim 14 or claim 15, ~~said system comprising means for measuring arterial oxygenation saturation, where the means preferable is a pulse oximeter~~ claim 12 further comprising a computer or a medical device with means for converting the venous blood acid/base status and oxygenation status into arterial blood values.

17. (Currently Amended) ~~A system according to any of claims 14-16, said system comprising a device for anaerobic sampling, preferably by drawing of a venous blood sample~~ A device for anaerobic drawing of venous blood, said device capable of reducing any residual gases in a blood sample bottle by applying a partial vacuum within the sample bottle.

18. (Currently Amended) ~~A system according to claim 14-17 further comprising a computer or a medical device with means for converting the venous blood acid/base status and oxygenation status into arterial blood values~~ A device for anaerobic drawing of venous blood, said device capable of reducing any residual gases in a blood sample bottle by applying a complete vacuum within the sample bottle.

19. (Currently Amended) ~~A system utilizing the method according to any of the preceding claims, said system comprising a blood gas analyzer, said analyzer capable of providing estimated~~

~~arterial blood acid/base status and oxygenation from a venous blood sample~~ A device for anaerobic drawing of venous blood, said device capable of reducing the effects of any residual gases in a blood sample bottle by using gases with partial O<sub>2</sub> and CO<sub>2</sub> pressures adapted to typical venous values within the sample bottle.

20. (Currently Amended) ~~A system according to claim 18 or claim 19, said system comprising means for measuring arterial oxygenation saturation, where the means preferable is a pulse oximeter~~ A device for anaerobic drawing of venous blood, said device capable of reducing the effects of any residual gases in a blood sample bottle by using one or more inert gases in the sample bottle.

21. (Currently Amended) ~~A system comprising a computer or a medical device with means for running the method according to claim 1 and any of claims 5-17, and said computer or medical device comprising one or more hardware components chosen among: blood gas analyzer and pulse oximeter~~ A device for anaerobic drawing of blood venous blood, said device capable of reducing any residual gases in a blood sample by dividing the sample bottle into one or more compartments with at least one compartment containing blood only.

22. Cancelled

23. Cancelled

24. Cancelled

25. Cancelled

26. Cancelled